UNIVERSITÀ
DEGLI STUDI DI MILANO-BICOCCA

# COURSE SYLLABUS

**2526-2-F8203B056-F8203B056-1**

## Learning objectives

The course aims to provide the basic concepts and the tools for the planning and the statistical interpretation of an epidemiological study. At the end of the course students should be able to properly set the level of an meta-analytic study, to orient oneself between different designs and to provide a statistical contribution to the writing of a research report. For some topics are planned practical exercises conducted mainly with language SAS.

*Knowledge and understanding*

This course will provide knowledge and understanding related to:

-Meta-analytic reasoning
-Classical and advanced meta-analysis methods
-Main errors in meta-analytic studies

-Applying knowledge and understanding*

By the end of the course, students will be able to:

-Critically read the results of a meta-analytic study
-Correctly analyze data from the literature
-Interpret summary measures using concise and technical language

## Contents

Overview of the different meta-analytic methods

Main models for evidence synthesis

Introduction to biases in the meta-analytic field

Development of a project

## Detailed program

Concept of evidence in epidemiology
Introduction to different types of evidence synthesis
How to start a systematic review
The PICO framework
How to define inclusion and exclusion criteria
How to conduct the search and select studies, including the use of AI tools
How to extract data
Effect measures
Sources of systematic errors
How to assess the risk of bias
How to synthesize the evidence
Publication bias
Thematic insights: Cumulative meta-analyses
Thematic insights: Network meta-analyses
Thematic insights:; Summary of results and the GRADE approach

## Prerequisites

No formal prerequisites

## Teaching methods

Lectures and computer lab classes on real data

## Assessment methods

Final test mode for attending students

The final test will consist of a first moment (basically the same for all) in which the working groups will present a short seminar of the practical activity carried out organized as a scientific article: introduction to the problem, materials and methods used, main results, discussion and conclusions. Each member of the group will have about 5 minutes available to comment the slides produced. The vote attributed to the seminar will summarize the students' organizational and communication skills as well as the clarity of exposition and the correctness of the statistical methodologies used and the conclusions drawn from the analyzes. At the end of presentation, each student will hold an oral exam in which the knowledge of the topics covered in the course will be checked as well as the ability to communicate with an appropriate technical language and the ability to reason in particular scenarios proposed by the teacher. Even the oral will produce a vote. The final grade awarded to the student will be an

average of the seminary and oral examination vote provided both are sufficient.

Final test mode for non-attending students

The final exam will be identical to that of the attending students for the oral exam. The seminar will be replaced by an individual in-depth study in agree with the teacher. The final grade awarded to the student will be an average of the exam paper and oral exam, provided both are sufficient.

## Textbooks and Reading Materials

**Students attending and non attending the course**

Slides from http://elearning.unimib.it/. Other material will be provided by the teacher

## Semester

II semester, I period (from march to may).

## Teaching language

The language of the course is the Italian. The work for the seminar (bibliographic research, research of data form national or international sites, etc) are in English language

## Sustainable Development Goals

QUALITY EDUCATION